NIKE 3D KITCHEN

A STRATEGY TOWARDS THE IMPLEMENTATION OF 3D PRINTING FOOTWEAR TECHNOLOGIES AT NIKE

THERESA SCHEMM / AMFI / 20/01/16
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NIKE 3D KITCHEN

No single mind is alike. No single feet are alike.

A BRAND AND PRODUCT PROPOSAL MAKING USE OF 3D PRINTING INNOVATION AT NIKE

In fulfillment of the requirements for the B.A. degree Int. Fashion & Technology and as a part of the research paper “How can fashion companies implement additive manufacturing into their organization?”

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20/01/16
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In Oct 2015 sporting goods retailer Adidas and New Balance released a prototype for a partly 3D printed running shoe, which is aimed to serve the athlete in personalized way and bring their performance to the next level.

**NIKE MAXIM #9: “WE ARE ON THE OFFENSE – ALWAYS.”**

This statement is one of Nike’s company values, which encourages its employees to see it as their first priority to be the leader in their field in order to win and stay ahead in a competitive environment.

Therefore this paper will present a strategy for a 3D printed footwear initiative at NIKE, which builds up upon the outcome of the research paper “How can fashion companies implement additive manufacturing into their business organization?” This represents the next natural step feeding into Nike’s urge to innovate and beat competition.

First of all this paper will analyze Nike as a company in order to provide its readers with background information that is necessary to gain a full understanding of the proposed strategy and product innovation. In order to present a compact overview it will only be deep dived into facts and existing Nike strategies that are relevant for the proposed strategy and its products.

Furthermore an action plan on how this strategy will come to life in the market place will be presented. As this strategy is intended to be a first outlook into Nike’s position in the 3D printing footwear market, a financial analysis will be excluded from this paper as a professional partnership with a 3D service provider is inevitable in order to assess the full spectrum of costs. Another reason for this is that this paper is bound by confidential company information. Instead it will be focused on the benefits that Nike will gain from the proposed strategy and elaborate on potential risks.

This paper is also intended as an inspirational guideline for other footwear companies that are considering additive manufacturing as an innovation driver for their company.

Amsterdam, 20th January 2016

*Theresa Schemm*
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1. INTRODUCTION

NIKE 3D KITCHEN

No single mind is alike. No single feet are alike.

Running is one of today’s fastest growing sports and is experiencing a boom since 2015 while there is no prospect of an end. The number of amateur and fun runs are rising, neon colored running footwear can be seen everywhere. But not only on the street worn by bypassing runners, instead had running shoes become a casualty for every sort of outfit. It can be said that the rise of the sport’s popularity is in full swing.

Every second counts. Every second can keep you from reaching the finish line.

The key aspects for running sportswear are fit and performance features. Not being able to find the right form and fit can be a severe challenge for runners and can have severe impact on their performance and health. On the other hand performance enhancing technologies are able to support the athlete to perform better and achieve their goals and be better.

This report introduces the concept of NIKE 3D KITCHEN, a premium performance concept for Nike’s running department, which is making use of additive manufacturing technologies.
2. **NIKE AND ITS MARKET PLACE**

In this chapter Nike will be introduced through an overview on its business and product offerings. In order to gain a deeper understanding on Nike’s company culture and business practices a short overview on its history and brand objectives will be presented.

2.1. **BUSINESS OVERVIEW**

Nike Inc. based in Beaverton, Oregon, US is the world’s largest designer, manufacturer and distributor of athletic footwear, apparel and equipment for a broad range of different sport and fitness activities worldwide. The company is distributing its product under several brands including Nike, Jordan, Converse and Hurley.

2.2. **COMPANY PROFILE**

NIKE, Inc. is a growth company.

We create innovative, must-have products. We build deep, personal connections with consumers. And we deliver an integrated marketplace with compelling retail experiences (Mark Parker, 2015)
2.3. MISSION STATEMENT

Nike’s main driver is to serve athletes through providing them performance enhancing products and services worldwide. Moreover the company is aiming to be an inspiration to non-athletes making them realize their potential, encouraging them to perform at their best and thrive for constant development.

2.4. COMPANY VALUES – NIKE’S 11 MAXIMS

#01 It is our nature to innovate
#02 Nike is a company.
#03 Nike is a brand.
#04 Simplify and go.
#05 The consumer decides.
#06 Be a sponge.
#07 Evolve immediately.
#08 Do the right thing.
#09 Master the fundamentals.
#10 We are on the offense – always.
#11 Remember the man.

2.5. HISTORY - A LOOK AT THE PAST

The organization was originally founded as Blue Ribbon Sports by Philip Knight, a former athlete and Nike Inc. chairman till 2015, and Bill Bowerman who used to work as former track and field coach, in 1964. At first Blue Ribbons Sports was operating as a distributor of Onitsuka Tiger, today known as Asics, and selling their first shoes out of a car’s trunk with the final goal in mind to eliminate the German footwear monopoly on the American market.
In 1971 Blue Ribbon Sports evolved to Nike, named after the Greek goddess of victory, and produced for the first time athletic footwear under its own name. At this time Nike disrupted the market for the first time through an innovative technology, the waffle design. The waffle design describes a running shoe that would enhance the athlete’s grip and traction through a waffle structure created through an iron that is usually used to make waffle pancakes. This technology laid the foundation for Nike’s key driver and trademark, innovation and serving the athlete.

![Waffle Racer](image)

Nike represents about 50% of the US athletic footwear market already eight years later, outpacing former market leader Adidas, being driven by groundbreaking design and its first cutting edge marketing campaigns.

![NIKE’s first marketing campaigns](image)

In the next 5 years Nike continued its momentum by introducing about 200 different footwear models, new technologies like Nike Air, athlete endorsements and extending its brand portfolio, which resulted in an average of annual sales increase of 100%, clocking $1 billion in 1986.

Expanding business to Europe and Asia, signing basketball superstar Michael Jordan, introducing the Jordan brand, acquiring Cole Haan, a retailer of casual lifestyle apparel and footwear, as well as Canstar Sports, who was by then the largest skates and hockey equipment retailer worldwide, launching the ‘Just do it’ campaign, signing golfer Tiger Woods, the great success of Nike Air sneakers and expanding its product portfolio with new innovative footwear and apparel designs, but also...
establishing an equipment line, enabled Nike to announce a revenue of $9.2 in FY97 (ending May 1997).

Driving this aggressive growth strategy through the extension of its brand portfolio range by obtaining Converse and Hurley, constant product innovation through Lunar, Shox, Free, Flywire, Dri-FIT, Flyknit, NIKE+ and NIKE Fuel, wide ranging sports marketing campaigns sponsoring high-profile sport events like the football World Cup and the Olympics.

2.6. MARKET POSITION - A LOOK AT THE PRESENT

Today Nike is employing worldwide more than 62,600 people operating in more than 180 countries and 6 continents. It closed FY15 (Fiscal year ending May 2015) with a total revenue of $30.6 billion, representing a CAGR (Compound Annual Growth Rate) of 10.3%. Nike’s growth margin expanded 120 BPS (Basis Points), while its share price has tripled in the past five years to $125.91 (Dec,2015). North America is owning a share of 44.9%, being followed by Europe with 23.3% and Emerging Markets with 12.7%.

This tremendous growth has been fueled by Nike’s constant drive for cutting edge innovation, its early recognition of the importance of marketing strategies, brand recognition and intensive research into changing consumer demands and expectations, while keeping the athlete’s needs in mind. An example for Nike’s success among its loyal customers is the so called ‘Air Max Day’, a ‘holiday’ that was invented by Nike on which the most popular sneaker the Air Max is being celebrated.
People are thriving for a healthier and more active lifestyle, which is fueling the demand for sport footwear as well as apparel. But it has also become fashionable to wear sneakers as a lifestyle shoe outside the gym, which emerged into the so called athleisure culture, where sportswear becomes a casual and sneaker the new it bag, while collectors’ items that sell up to several thousand dollar. This cannot be only seen as a fashion trend that fades out after one or two seasons, but rather as a general shift of lifestyle, which is here to stay (Townsend, 2015).

Another growth driver is Nike’s equal focus on the men’s and women’s business, which differentiates the company from many competitors in the sports segment. Furthermore Nike’s constant drive to lower net margins elevates the company more and more from its competitors. While competitors drive an average net margin of 12% Nike is able to achieve 14% in Q3 FY15 (CSI, 2015).

The outstanding numbers of FY15 enabled Nike to position itself as the most valuable apparel brand in 2015, outpacing fashion companies like Zara, Louis Vuitton, H&M or PVH Corp. (Millward Brown, 2015) leaving behind its direct athletic footwear and apparel competitors like Adidas ($19.3 billion), VF Corp. ($12.3 billion), Under Armour ($3.1 billion) Sketchers ($2.4 billion) and Puma ($3.9 billion).
3. MARKET OPPORTUNITIES – A LOOK INTO THE FUTURE

This chapter will be focused on the overall athletic footwear market and its growth driver in order to gain an understanding of Nike’s aggressive growth strategies for 2020. Furthermore the unique selling point of the Nike will be highlighted as a growth driver and enabler for the proposed 3D printed footwear initiative.

3.1. GLOBAL (ATHLETIC) FOOTWEAR MARKET CAPACITY 2015 - 2020

The overall footwear market is expected to grow in terms of value by 1.72% up to $372 billion by 2020, while athletic footwear owns $87 billion worldwide, growing with a CAGR of 1.8% (Transparency Market Report, 2015). The share of men’s footwear leads with 62%, being followed by women’s footwear with 29% and kids with 9%. In terms of geography split, Europe is suggested to own the largest share with 50%, followed by North America with 35% and Asia and the rest of the world 15% (GIA, 2015).

The footwear market growth is being generated by new footwear technologies and fashion trends. Therefore companies are focusing more and more on clear and effective product differentiation strategies in order to succeed in the mature market of footwear. But also consumers’ constantly changing expectations, for instance towards seasonal trends, sustainability or product personalization are triggering the constant evolution of the footwear industry. Furthermore consumers are becoming more open-minded when it comes to trying out new products and fashion styles which consequently leads to a broader range of products in terms of silhouettes, colors or materials. Moreover an increasing population, a growing middle class with rising discretionary spending budgets, fuels the growth of the footwear market (GIA, 2015). Another growth driver are emerging retail outlets, that distribute branded products at lower price points (Smith, 2015). On the other hand several factors are sandbagging the growth of the footwear market. The key factors are concerns from an environmental perspective as well as rising raw material costs (Smith, 2015). An example for rising costs would be that the average price for a leather upper rose by 8.6% in 2014 (Klein, J.).

3.2. NIKE’S TARGETED MARKET SHARE 2020

“NIKE is built for growth,” stated Mark Parker, President and CEO of NIKE, Inc. at the investor meeting in 2015. “We see tremendous growth potential in our key categories and geographies, as we connect with athletes through personal service, inspirational experiences and innovative product. When we look across our entire business, there has never been more opportunity.”

In FY20 Nike is looking at an aggressive target of $50 billion, which represents a 63% growth in revenue over a time line of 5 years. Though the global athletic footwear market is expected to grow at a CAGR of 1.8%, Nike’s footwear sales achieved a CAGR of about 10% on average in the past 3 fiscal years.

3.3. GROWTH DRIVERS AND CONTINUOUS MARKET LEADERSHIP

Nike is currently recognized as the top sport brand in the world, maximizing its growth year by year while outpacing its competitors as described in through driving its vision of cutting edge innovation and a strong product pipeline.
Through the following strategies, facts and growth drivers, Nike is convinced to achieve its target. As this paper is restricted to confidential codes only the ones that are publicized and relevant to the product proposal will be presented.

Generally speaking Nike is expecting growth from all categories, gender and across product engines. Especially Basketball, Jordan, Converse, Running, women’s and kid’s division and its DTC business (direct-to-consumer = brick and mortar and e-commerce) will play an important role in driving Nike’s success. Moreover maximizing its profit margins is as another key growth driver for FY20.

### 3.3.1. INTEGRATED MARKET PLACE

One success driver of Nike’s future growth is its focus on its DTC channel, which was able to increasing in revenue by 29%, while slightly decreasing its wholesale penetration, which is still expected to grow mid to single high digit in the upcoming 5 years (Nike, 2015). As in DTC revenues do not have to be split between wholesale partners, profit margins are higher and therefore the DTC business offers a more profitable business opportunity.

Next to inline and factory stores, E-commerce is part of DTC, which delivered a 66% revenue growth and enables the company to serve market demand where no brick-and-mortar stores are present. In 2015 Nike expanded its nike.com business to 28 countries in total, reaching out to emerging markets, like for instance Brazil, which experiencing great growth and demand. Right now Nike.com represents only 20% of the DTC business, which suggest a high growth potential as E-Commerce is booming worldwide, which is targeted to sevenfold from $1billion to $7 billion by FY20.

### 3.3.2. INNOVATION CULTURE: PRODUCT AND MANUFACTURING REVOLUTION

In order to continue to the road of innovation and to enhance its broad range of design patents, which is currently the third largest in the US market, Nike announced that they are on the path of a ‘Manufacturing Revolution’ (Nike, 2015). This new approach towards manufacturing will be focusing on sustainable manufacturing excellence, automatization, innovation and modernization.

Making use of digital manufacturing technologies to make better and more profitable products is nothing new for Nike. Nike’s Flyknit technology, which describes a knitting technique that allows producing a fully-knitted upper by feeding a digital file into a knitting machine, was the first big step in Nike’s manufacturing revolution (Addady, 2015). Flyknit enables one the one hand rapid prototyping, which gives Nike room for more testing, creative design thinking, but also leads on the other hand to a more sustainable production of end products as about 20% of the material costs, but also 50% of labor costs can be saved (McNew, 2015).

![Fig.: NIKE Flyknit Innovation](image-url)
The next step will be the opening of a new research laboratory called the Nike Advanced Product Creation Center for designers, engineers and material scientists, which will be based at WHQ (World Headquarter) in Beaverton, Oregon. The aim of this research center is to explore digital design and additive manufacturing under one roof, with the goal in mind to make create more personal products that will enable Nike to react quicker to market and consumer demands.

Furthermore Nike proclaimed several strategic partnerships which are targeted at driving its innovation strategy. One of Nike’s new business partners is NOVA, a subsidiary company of DreamWorks Animation, which is specialized in 3D digital design. Through this collaboration Nike is aiming at a revolution of traditional cut-and-sew manufacturing to a system that will be able to provide "nearly instantaneous digital print applications, photo-real 3D visualizations and ultra-rapid prototyping."(Vasilescu, 2015)

Nike is also cooperating with Flextronics International (FLEX), which is a US based manufacturing expert, focused on digital manufacturing solutions. This partnership is aiming at a seamless integration of footwear innovation within Nike’s supply chain, which will be resulting in shorter time to market timelines as well as producing more sustainable products through less usage of material, which could
potentially save up to $1 billion (Low, 2015). Moreover this partnership aims at the development of footwear innovations that will be able to reach consumers in a more personal and quicker way (Nike, 2014).

4. OPPORTUNITIES IN 3D PRINTED FOOTWEAR MARKET

This chapter is intended to give an overview on the 3D Printing market and Nike’s current position in it. Moreover a closer look will be taken at the directly competing sporting goods retailer Adidas and New Balance and at the 3D printing startups SOLE and Feetz. Finally the named companies will be evaluated in order to learn from them.

4.1. THE 3D PRINTING MARKET

"The 3D printing market is continuing its transformation from a niche market to broad-based, global market of enterprises and consumers." (Stamford, 2015)

Additive Manufacturing (AM) has been receiving an increasing amount of attention by a broad range of industries, the media as well as by the public (Mc Kinsey, 2015) and is being called out as the spark of the next Industrial Revolution (Barnatt, 2013). For a comprehensive overview on the possibilities, opportunities, challenges, strengths and weaknesses of AM technologies further reading into the attached research paper is being advised.

4.2. NIKE’S OFFERING OF 3D PRINTED PRODUCTS

Forbes magazine entitled Nike Inc. to be the most innovative company in 2013 (Carr, 2013). Therefore it is no surprise that the sporting goods giant already picked up on AM technologies and made them an integral part of their ‘Manufacturing Revolution’, which has been described in the previous chapter.

Nike as well as most of its direct competitor has been using 3D printing for prototyping in the product development process for many years and it became a standard procedure. Moreover Nike developed a series of products that contain a 3D printed part in the actual end product, which will be described in this chapter.

Nike Vapor Laser Talon

In 2013 Nike provided selected American Football athletes with the Nike Vapor Laser Talon, which features a 3D printed plate in the cleat, which describes the studs on the sole of a shoe, that provides the wearer with better traction on football turf and finally supports them to perform better and faster. The plate is crafted by using SLS (Selective Laser Sintering, please see Appendix of Research Paper A.n.), which gave the designers the possibility to create a certain pattern that would have been not possible
with making use of traditional manufacturing technologies. Nike states that it was possible for them to create the shoe in a fraction of the timeframe they would have needed if they would have wanted to achieve the same results with traditional manufacturing methods, which truly accelerates the innovation process (Nike, 2013).

One year later Nike released an upgraded version of named football shoe, the Nike Vapor Carbon 2014 Elite Cleat as part of their collection for the Super Bowl XLVIII. This shoe was designed for precision, speed and impact on highest level (Nike, 2014).

**Cooling Helmet**

In July 2015 Nike developed a 3D printing ‘cooling helmet’ for their decathlon athlete Asthon Eaton, which was specifically printed to his head measurements in order to enhance recovery time between the matches. The design has not reached commercial market potential yet and Nike is planning on going broader with it in the next year with the upcoming Olympics in mind (Nike, 2015).

These innovations towards AM seem to be only the tip of the iceberg as Erik Sprunk, Chief Operating Officer at Nike Inc. stated at the GeekWire conference, that a future when shoes can be printed just anywhere, also at home is “not that far away” (Soper, 2015). This bold statement ties back to the the first Nike Maxim: It is our nature to innovate. Moreover it confirms the brand’s sincere commitment towards AM.

Though Sprunk’s statement might sound futuristic in the first place, Nike has already done the first step to secure its position in the 3D printing footwear market by patenting a manufacturing technique called “”. This describes an automated process where a computer scans the strobel, which is the material that
is usually woven on the inside of the upper, and creates a digital design file with instructions in terms of measurements for the 3D printer, which is then able to merge the upper and sole. Attaching these two parts is one of the most challenging steps in footwear production, as it bears to most technical challenges and involves a lot of manual labor. This patent enables Nike to be set up for success to incorporate 3D printing as a mass customization option eliminating almost all manual work of this production process and making 3D footwear production profitable.

Representative drawing for US9155357

4.3. COMPETITIVE LANDSCAPE IN THE 3D PRINTING FOOTWEAR MARKET

As described above Nike is preparing itself for leadership in the 3D printed footwear market. However its competitors Adidas or New Balance seem to be a step ahead in the mind of the consumer as they already gave a preview of their 3D printed footwear propositions that have both the possibility to be customized to the athlete’s foot.

Nike Maxim #9: “We are on the offense – always.”

Driven by this company value it is the next natural step for Nike to develop an aggressive plan of attack that will secure their market position as the undisputed leader.

In order to position Nike’s 3D product offering successfully in the market place by differentiating itself from competition, the 3D printed footwear products of Adidas and New Balance as well as the orthotic insole companies SOLE and Feetz will be analyzed and evaluated.

4.3.1. ADIDAS

Company Profile
Adidas is known as one of the leading sporting goods manufacturers in the world based in Herzogenaurach, Germany and has been founded in 1906

Revenue: $19.3 billion (2015)

Mission: “to be the leading sports brand in the world”

Product offering
Adidas is offering athletic footwear, apparel and equipment for a wide range of sport activities like for instance football, basketball, running, training, swimming, skateboarding, rugby or golf. Moreover
Adidas gained recent popularity through its younger lifestyle brand Adidas Originals as well as artist or brand collaborations, for example with Kayne West, Pharrell Williams or Stella McCartney.

3D printed footwear offering

In October 2015, Adidas announced its partnership with the 3D printing company Materialise to explore and create the possibilities of additive manufacturing in order to drive all elements of production. Furthermore ‘Futurecraft’ was established, a project focused on the development of innovative footwear through new manufacturing techniques. Within the Futurecraft series Adidas revealed the concept of a running shoe with a 3D printed midsole, that is made out of modified thermoplastic polyurethane (TPU), a material that is durable, elastic, but also offers enough strength and abrasion resistance to live up to a runner’s needs. The midsole has been created by the AM method selective laser sintering. The silhouette of the running shoe is based on the Adidas Ultra Boost without the cage and features Primeknit on the upper, which is Adidas’ seamless knitting technique and comparable to Nike’s Flyknit Technology. According to Turnschuh.tv, a premium sneaker expert platform, who received one of the prototypes, the shoe might look like the Adidas Ultra Boost at first, though the feeling is completely different and cannot be compared to Boost Technology. According to them the shoe is extremely lightweight, stable and offers great cushioning. Moreover they state that they believe that this proposition towards footwear is the future and they believe in the potential of 3D printing and are excited about its benefits.

The product will not be available for purchase until the summer of 2016 at the earliest and Adidas stated that it is so far a “statement of intent” (Liedtke, 2015).

In December 2015 Adidas announced a partnership with Parley, an environmental organization whose goal it is to remove plastic waste from the ocean. The Parley x Adidas footwear project is an extension of the 3D printed Futurecraft running shoe and features a 3D printed midsole that is made out of recycled polyester and gillnets from the ocean. This collaboration adds a great sustainability driver to the product offering.

4.3.2. NEW BALANCE

Company Profile

New Balance is known as one of the leading footwear manufacturers focusing on running gear. The company is based in Boston, Massachusetts and got founded in 1906.
Revenue: $3.3 billion (2015)

Mission
New Balance (NB) is aiming to “to aid athletes in their pursuit of excellence, whether that means helping professional athletes set records and win medals, or propelling everyday athletes to achieve a new PR, run their first 5K or just to live a more healthy and active lifestyle” (New Balance, 2015)

Product Offering
NB offers footwear for running, football, cross training, basketball, hiking, skating, golf; fitness apparel for men, women and kids. Moreover NB offers a small range of training apparel for all genders.

“Our products are the perfect blend of function and fashion, giving you the performance technology you need and the style you want” (New Balance, 2015).

New Balance is differentiating itself from its competitors through its USP (Unique Selling Point) of being ‘Made in USA’ and advanced product customization.

3D printed footwear offering
In November 2015 New Balance announced their new product proposition, customizable running shoes with 3D printed midsoles. NB teamed up with additive manufacturing company 3D Systems for product development, using selective laser sintering (SLS) a new elastomeric powder named ‘DuraForm Flex TPU’. This material promises to be lightweight and flexible, key factors for a running shoe.

Fig.: New Balance 3D printed running shoe

Though the shoe will be releasing already in spring 2016, the customization approach is still in the concept stage and is expected to become a reality only one year later. Furthermore the shoe will be having a limited availability of “a couple hundred “and will only be brought to the market in Boston at the same time as the Boston Marathon takes place. Further on NB is planning a global expansion of the style. The product is targeted at the committed amateur runner, which is willing to pay a premium price for innovative footwear. The retail price of the shoe has not been announced, NB reports that it will be higher than the average running shoe of their product offering.
4.3.3. FEETZ

Company Profile

Feetz is a 3D printing footwear startup who is aiming at bringing fully 3D printed customized footwear directly to the consumer. It has been founded as a start up in Chattanooga, USA in 2013.

“Before the advent of mass manufactured shoes, most shoes were made to fit by a local cobbler. We know that isn’t realistic anymore, but we also think that shoes should be made just for YOU, not the masses.” (Feetz, 2015)

Mission

“Provide customers with custom fit, 3D printed shoes through our SizeMe technology. Extraordinary shoes just made for you.” (Feetz, 2015)

Vision

1. “Never try a pair of shoes again.”
2. “Save time with the Feetz App.” The Feetz app gives customers the opportunity to 3D scan their foot at home by photographing their foot three times
3. “Made where you are.” Through additive manufacturing Feetz shoes will soon be able to printed out everywhere. (Feetz, 2015)

3D printed footwear offering

Feetz offers individualized footwear by generating exact 3D footwear models from three photographs of a customer’s foot. Moreover the consumer is able to customize color and shaping of the shoe to a certain extent. “ (Feetz, 2015)

So far the company is not selling their products directly to the consumers yet as they are still in the development face. Feetz offered a small batch of pre-orders which have been used as samples for the development until the product is set up for success in the market place.

![Feetz](image)

4.3.4. SOLS

Company Profile

“SOLS is a premium lifestyle brand pioneering mass bespoke fashion and reinvigorating movement via 3D printing technology. As one if the first application of 3D printing in the consumer space, SOLS is bridging the gap between elevated comfort and superior design to deliver a luxurious and truly
comfortable, textured product uniquely created for the contours of each individual’s foot – all with the convenience of ordering through an easy-to-use-app. “

SOLS has been founded as a start up in NYC, USA in 2013.

Mission

“Never stop moving. We believe in perfect fit. We believe comfort, balance and health start from the ground up. We believe that shoes….well, they are just better with SOLS.” (Sols, 2015)

3D printed footwear offering

SOLS is so far offering two different footwear insoles that are 3D printed, SOLS Flex and SOLS Rx, which are made from Nylon 11, a NASA-grade plastic. SOLS Flex are intended to provide the consumer with the perfect fit featuring arch support, cushioning, enhanced comfortability, relief from foot, ankle and back pain, which is intended to lead to a better overall posture, to boost training efficiency and painless comfort while walking. Unlike traditional orthotics SOLS Flex supplement additional support for workouts as well as daily life and is priced at $199. SOLS Rx is a corrective orthotic device which is distributed through podiatrists across the US.

Fig.: SOLS

Through the SOLS app customers are able to order the product digitally by following a fitting process which asks for three pictures of each foot in weight and non-weight bearing stances. An algorithm creates a 3D model of the foot which reflects the individual’s morphology.

In Oct 2015 SOLS partnered up with IRONMAN, a US based sports brand with over 180 events in over 20 countries worldwide founded by the World Triathlon Corporation. This collaboration gave SOLS the opportunity to work closely with professional and semiprofessional athletes and promotes their product through this premium channel. This was only the first collaborative project of SOLS through IRONMAN, in 2016 there will be larger brand activations.

4.4. COMPETITOR EVALUATION

Adidas and New Balance released two promising partly 3D printed running shoes, both with the goal of customization options towards sizing and fit. Moreover Adidas approaches its AM footwear prototype Parley x Adidas from a sustainability angle. Looking at the executions it can be pointed out that both companies try to state that the sole has been printed by providing an uncovered view to the 3D pattern, using 3D printing technology also as a marketing tool. As both shoes got featured on many fashion and sneaker platforms as well as in the tech community, it can be concluded that the “statement of intent”, like Adidas Innovation manager Liedtke (2015) called it, was a successful brand activation stunt and gave both companies the possibility to state their focus on innovation.
SOLE and Feetz set a great example on how a 3D scan of the consumer’s feet, which is necessary for the production of personalized footwear, can be provided in an easy way through their developed apps by the consumer himself. Therefore a visit at a 3D print footwear brand’s store or similar in order to be 3D measured will not be a necessity to purchase customized AM footwear.

None of the analyzed brands, except SOLS is already in the position to announce a retail price for their product. Therefore it can be concluded that all companies are still in an early stage of their product lifecycles and it can be speculated that the current price point is one that still needs to be improved, which enlarges Nike’s time frame to bring their 3D footwear proposition to the market.

5. CONCEPT & PRODUCT PROPOSAL

The following chapter proposes and elaborates on a new brand initiative and products for Nike, which are fueled by AM technology.

5.1. BRAND CONCEPT

NIKE 3D KITCHEN (=N3K)

N3K IS THE ATHLETE*.

*if you have a body, you are an athlete.

No single mind is alike. No single feet are alike, not even your left and right one.

NIKE 3D KITCHEN vision is to bring tomorrow’s innovation to every individual athlete by rethinking footwear from the ground up, utilizing the most advanced additive manufacturing technologies in order to achieve product customization.

NIKE 3D KITCHEN is Nike’s new innovation hub that sets the standard for 3D printed footwear. N3K is leading the industry with ground-breaking 3D printing innovation in order to maximize each athlete’s individual potential while keeping the environmental impact as low as possible.

At Nike the consumer always comes first. NIKE 3D KITCHEN products are a true approach towards mass customization always with the goal in mind to help athletes* to achieve their personal best anywhere and anytime.
5.2. **PRODUCT CONCEPT**

NIKE 3D KITCHEN VITA (N3K VITA) is intended as the first product line of the previously described brand concept NIKE 3D KITCHEN.

**NIKE 3D KITCHEN VITA (N3K VITA)**

(lat. VITA = life)

We spend most of our lives on our feet reaching out for the next goal. Therefore products that on the one hand support us in our daily life and on the other hand enhance our performance in a personalized way will bring us closer to the things we want to achieve. N3K VITA will redesign movement.

**NIKE 3D KITCHEN VITA RUNNING SOLE (N3K VITA RNN SOLE)**

N3K VITA RUNNING SOLE will roll out the success story of NIKE 3D KITCHEN’s first product line N3K VITA. N3K VITA RNN SOLE are 3D printed footwear insoles, which meet the exact personal measurements as well as individual requirements of the wearer. N3K VITA RNN SOLE will serve on the one hand as orthotics that prevent or eventually correct abnormal or irregular walking pattern by supporting the foot in the needed angles. On the other hand N3K VITA RNN SOLE will be providing extra cushioning and support through VITA technology, which enables the athlete to perform at best.

In no other performance product category a snug and comfortable fit is as important as in running. Therefore N3K VITA RNN SOLE will serve runners at first to help them achieve their personal best.

As every shoe needs a different insole, N3K VITA RNN SOLE will be launched first of all only together with the bestselling premium performance running shoe, for men as well as for women in order to reach the broadest relevant consumer base.

This running shoe is positioned in the premium price segment as the 3D printed insoles will higher the overall retail price and only consumers that are already committed to pay premium prices and are educated on technology benefits will not be hold back due to price sensitivity.

**NIKE 3D KITCHEN VITA RUN PREMIUM (N3K VITA RNN PRM)**

With the N3K VITA RUN PREMIUM N3K is creating a performance running shoe that will be the athlete’s second skin, a natural extension of his body and make him and his footwear one. Welcome the NIKE 3D KITCHEN VITA RUN PREMIUM.

A fully 3D printed midsole as well as insole (N3K VITA RNN SOLE) that are both optimized to the athlete’s precise measurements combined with Flyknit technology on the upper will change the game of running by providing lightweight stability, support, cushioning and most importantly a snug fit tailored to the wearer’s feet.

This product proposition is intended to give an outlook into the future of NIKE 3D KITCHEN and will not be part of the following product development plan as it asks for different requirements as the N3K VITA SOLE. Therefore a different assessment needs to take place to explore the full potential of the N3K’s first product line. However the N3K VITA RUN PRM will be included in the marketing plan as it will be serving the main brand heat driver due to better visibility of the 3D printing technology as well as overall aesthetics.
6. DESIGN & DEVELOPMENT PLAN

The following chapter will give further insight on the N3K insole proposition, chart its product development and elaborate on its relevance.

6.1. PRODUCT DEVELOPMENT GOALS

- Be the first one to bring 3D printed customized performance insoles to the market place
- Zero waste policy
- Commercial price point
- Meet the expectations of the Nike Running consumer

6.2. PRODUCT REQUIREMENTS

Producing footwear through additive manufacturing as end products will be a new challenge for Nike. Having the right people in place as well as technical and financial resources will support Nike to achieve this goal.

The following is needed in order to achieve the proposed product concepts:

**Biomechanical & Consumer Data**

With the goal in mind to provide the perfect support and fit for each individual athlete, research into biomechanics, which describes the study on human movement and related forces, as well as the consumer’s personal measurements and footwear analytics of the consumer are necessary.

Nike is a specialist for performance footwear since decades, while the Nike Sports Research Lab (NSRL) is one of its main enablers to drive innovation. In order to inform product development Nike is collecting data from high profile athletes focusing on biomechanics, physiology, perception and performance in NSRL. Therefore it can be said that Nike has already a great resource of existing data and the ideal environment to collect more necessary information that can be used to develop supporting and performance enhancing footwear insoles.

Furthermore a partnership with an experienced player in the custom foot orthotic insoles market would add a new perspective on the product development process as this partner would have a medical background rather than purely performance sports grounded one.

Therefore Bayer Healthcare AG, Hange Prosthetics & Orthotics Inc. and Superfeet Worldwide Inc., who are known as the leading orthotics providers, can be considered as potential partners.

In order to make this data personal and finally create a footwear piece tailored to the wearer’s feet, a 3D scan of the customer’s feet needs to be obtained.

This data can be collected through different sources, while a combination of them enhances the process and final outcome.

**NIKE 3D KITCHEN APP (N3K APP)**

The N3K APP will guide the user through an easy process of taking three pictures of each foot in weight and non-weight bearing stance. This data will feed into an algorithm, based on data provided by the NSR and potential orthotics providers, which calculates the ideal shape of an insole according to the consumer’s 3D foot model.
3D FOOT SCAN

A 3D foot scan that will acquire the exact measurements and make-up of a consumer’s foot will be another method to obtain the data for N3K VITA. The scanning will take place in specific Nike running and flagship stores as well as at a small selection of wholesale running partner doors.

NIKE+ RUNNING APP

Nike+ RUNNING APP gives insights into the running habits and history of the consumer and will be able to personalize the N3K insole. This source of data will only be able to achieve the final product in combination with the N3K App and/or a 3D foot scan.

Material Science, 3D Printers & Expert Knowledge

It can be advised to choose Selective Laser Sintering (SLS) as a 3D printing method for the VITA 3K RNN insoles. This is due to SLS’s ability to produce waste free, which will achieve the set goal to have a zero waste policy. But also its ability to produce objects with a very high level of complexity will be SLS’s advantage over other printing methods. Looking back at Nike’s 3D product history as well as printing methods of competing footwear brands it can also be concluded that SLS is the most efficient 3D printing method for the intended purpose. A detailed explanation of this AM technology can be found in the Appendix A.n. (1) of the Research Report.

Choosing the right material is an essential part of the product development process. Also here Nike can take advantage of its already existing NSRL database and sources of its footwear developer and design expertise.

Furthermore it is advised to partner with experienced 3D Printing experts like for instance 3D Systems or Stratasys in order to achieve the most profitable and qualitative result. The recently announced partnership with FLEX, a manufacturing company specialized in digital manufacturing hints that this step has already been taken. As mentioned earlier Nike announced the opening of a new research laboratory called the Nike Advanced Product Creation Center, which will be driving internal R&D of the 3D printing opportunity.

6.3. PRODUCT RELEVANCE

The N3K VITA RNN SOLE is market and consumer relevant due to the following reasons:

- It provides a solution to all sizes and forms of feet
- A perfect fit is one of the key factors of running shoes
- Running is on trend
- Consumers are willing to pay more for comfortable and customizable shoes
7. PRODUCTION EVALUATION

A key factor to successfully implement AM technologies into a company is to evaluate strategically if AM will actually be advantageous either for the production process or product. In order to determine if AM is actually the most suitable manufacturing option, the AM evaluation framework of the research report will be taken as a guideline (please see Appendix A.p of the Research Report).

7.1. INITIAL ASSESSMENT

The first step of the evaluation of AM technologies is to identify at which point the company and its products sits on Conner et al.’s ‘Three axis model of manufactured products’ (2014), which is defined through volume, complexity and customization (see Appendix A.q. of the Research Report). The goal of this evaluation is to analyze which products can be taken into consideration to be efficiently produced by AM technology (Connor, 2014).

N3K VITA SOLE: Mass Customization

As N3K insoles have a high level of customization, but will also be produced in large volumes they can be classified as a mass customization product with AM potential. Mass customization can be a challenging goal for conventional manufacturing processes as it is characterized by standardization, which is the opposite towards customization. On the contrary AM is able to fulfill mass customization’s driver towards a high level of customization, but complexity at the same time.

Senvol’s Seven Scenarios

Senvol, who offers the first and most comprehensive AM database and which has the goal to enable companies to decide if AM is a profitable production method, suggests a framework of seven scenarios that help determine if AM is beneficial from a supply chain standpoint (see Appendix A.r. of the Research Report).

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Yes/No</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expensive to Manufacture</td>
<td>Yes</td>
<td>Conventional mass production is too expensive for customized goods such as insoles. A new mold would be needed for each customer which would be a highly cost as well time intensive proposition and therefore unrealistic.</td>
</tr>
<tr>
<td>Long Lead Times</td>
<td>Yes</td>
<td>Today’s consumer is becoming more and more demand which asks the apparel and footwear industry to evolve at the same speed. Therefore it is becoming an important strategic pillar to bring the product as fast as possible to the consumer in order to fulfill his needs.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>High Inventory Costs</td>
<td>Yes</td>
<td>The growth of Nike Factory Stores (Outlet Stores) where unwanted product is being moved when it did not sell at full-price in Nike stores or online, proves that overstocking is a challenge for Nike.</td>
</tr>
<tr>
<td>Do you overstock or understock? Do you struggle with long-tail or obsolete parts? AM can allow for on-demand production, thus regarding the need for inventory.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sole-Sourced from Suppliers</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Are any of your critical parts sole-outsourced? This poses a supply chain risk. By qualifying a part for AM, you will no longer be completely reliant on your current supplier.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote Locations</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Do you operate in remote locations where it is difficult, time consuming or expensive to ship parts to? AM may allow you to manufacture certain parts onsite.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Import/Export Costs</td>
<td>Yes/No</td>
<td>Very much dependent on the country</td>
</tr>
<tr>
<td>Do you pay substantial import/export costs on parts simply because of the location of your business unit and/or your supplier? On-site production via AM can eliminate these costs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved Functionality</td>
<td>Yes</td>
<td>AM will give Nike the possibility to enhance footwear design through a new level of design complexity as it breaks out of the usual design frames that are set by traditional manufacturing methods.</td>
</tr>
<tr>
<td>AM can enable a part to be redesigned such that its performance is improved beyond what was previously possible.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AM as a production method can be taken into consideration for N3K insoles as most of the suggested questions have been answered with a ‘Yes’.

For an initial quantitate evaluation it is also advised to investigate further into the AM usability of N3K VITA SOLE through Bacchetti et al.’s (2015) AM drivers (see Appendix A.s. of the Research Report). This assessment can only take place when the first realistic samples of N3K have been produced to be
able to give insights into weight, material costs and labor intensity. At this state the prototype of the insoles is still in an early stage of its development and therefore calculations towards mass production cannot be made yet.

Though it can be said that AM is very likely to be the most suitable production method for N3K insoles due to its ability to serve as a mass customization option for complex, sustainable and personal design.

7.2. TECHNOLOGICAL ASSESSMENT

During the second step of the evaluation N3K insoles are being reviewed from a technological standpoint. Hereby it is important to lay out all technological properties of the product like for instance material, physical as well as mechanical aspects. A comparison of these aspects with the one of a database, for instance Senvol’s that includes every possible manufacturing technology, AM as well as TM techniques and their properties and requirements, will result in the identification of the most suitable manufacturing method.

This assessment will take place as soon as the final prototype of N3K insoles is ready as specific measurements and material aspects need to be provided.

In case AM is the most beneficial method Sevenol’s tool will provide a list of 3D printers, going along with a selection of materials for a company’s chosen product or application. Moreover this list will be able to give advice for potential vendors and machinery prices. Therefore Nike will be able to identify which machines and materials they can make use of in order to fulfill their goal of offering personalized performance insoles.

As mentioned in the previous chapter SLS will most probably be the most profitable and effective printing method due to its ability to print complex structures and resourceful material usage.

7.3. ECONOMICAL ASSESSMENT

The last step of the AM evaluation framework is intended to compare the costs of the product being produced by AM and TM to determine the more profitable manufacturing option. Custom made insoles produced through traditional manufacturing can be purchased for a retail price of $200 to $800 from a broad range of companies. This asks for a further deep dive into the performance and material aspects of these products in order to be able to compare the cost price coming out of the technological assessment of N3K VITA SOLE. For an in-depth overview on costs a guideline for reading suggestions is provided in the Appendix A.t. of the Research Report.

7.4. CONCLUSION

It can be concluded that N3K VITA SOLE show great potential to make use of additive manufacturing technologies. Especially AM’s ability to deliver customized products without additional costs and the possibility to bring production closer to the point of sale are great advantages of AM over TM for the production of N3K insoles.

It must be pointed out that it is inevitable to make an informed cost calculation based on the outcomes of the first prototypes in order to assess its profitability.
8. MERCHANDISING STRATEGY

Introducing a new Nike category, N3K, with premium products to the market has to be handled in a thoughtful manner.

8.1. MARKET PLACE MANAGEMENT

In order to assure that N3K is perceived by the right consumer in the intended way, as an authentic and premium running brand, NIKE 3D KITCHEN products and services are exclusive to Nike’s Integrated Market Place Offense and will not be sold through Nike’s wholesale partners as well as franchise partners. This is also tying back to Nike’s strategy for the next five years, which prioritizes the DTC channel. N3K products and services will not be available in all Nike doors, but rather focus on flagship stores the so called Nike Towns that are for instance located in London, Paris or New York and specialized running stores.

An exception for the distribution outside of DTC is a selection of authentic, premium running doors that will be provided with all necessary equipment and training to be able to offer qualitative 3D scanning service and give professional advice to their customers.

Moreover the product will be introduced through NikeLab, though these Nike destinations can be seen as marketing activation rather than distribution location. For a detailed view on this strategy please see chapter 9.

8.2. PRODUCT LAUNCH STRATEGY

1. Season of N3K: SUMMER 2017 - SEEDING

In order to be perceived as an exclusive, premium and mysterious brand the first N3K products will be sporadically distributed through precisely chosen channels.

The first step of this launch plan will be to launch 250 units of the N3K VITA footwear through influencer marketing (see 9.1.)

2 months later the shoe will be releasing as a Quickstrike, which is a term for Nike sneakers that are very limited in their availability in terms of units as well as distribution. In this case the capacity will be 1000 units worldwide and while half of the units will be sold through NikeLab (see 9.2.), while the other half will go to so called influencers (see 9.1.)


The N3K offering will be scaled in its second season and the top 10,000 users of the Nike+ RUNNING APP will be invited to be the first to buy the N3K footwear as well as the insoles. The units of the footwear will still be kept tight in order to enhance the heat factor of the product. After the end of the fall season the insoles will be offered to the wider market place.

4. Season of N3K: SPRING 2018 – MAXIMISE

N3K is going market wide and will be available at all doors described in 8.1.
9. MARKETING PLAN

Though N3K VITA SOLE will be the first product coming out of the NIKE 3D KITCHEN, the overall marketing initiative will be focusing on the overall concept of N3K in order to energize the market place.

9.1. INFLUENCER MARKETING – ENERGY MARKETING - SEEDING

Instead of looking at companies consumers of today rather look at each other or more specifically at their favorite personalities on various social media channels to make their purchasing decisions. Therefore Nike will be applying Influencer Marketing to seed the message and first products of NIKE 3D KITCHEN into the market place through a hand-picked number of key individuals in Nike’s key cities around the globe, from New York to London to Tokyo.

Picking relevant people is the most important step of this marketing initiative. The following equation explains what makes some an ‘Influencer’:

\[
\text{Influence} = \text{Audience Reach} \times \text{brand affinity} \times \text{strength of relationship with followers}
\]

The Nike Energy Marketing teams that are located in the key cities will be making sure that this strategy will be coming to life.

9.2. RETAIL BRAND INITIATIVES

NikeLAB are exclusive, premium and consumer focused retail spaces that are located in Nike’s key cities worldwide, but also describes Nike’s trendsetting and quality-driven premium collections. Product sold in NikeLAB are part of the NikeLAB collection, which consists of apparel as well as footwear, often designed in collaboration with relevant fashion forward and performance driven designers such as Sacai, Stone Island or Fragment. Moreover the products are often extremely limited and come with a higher price point due to premium materials, quality craftsmanship, performance upgrades on current or retro Nike silhouettes and bespoke designer collaborations.

Therefore NikeLAB spaces are offering the perfect opportunity to present the premium customization concept of N3K to an engaged consumer that is valuing premium product and performance. A 3D printer located in store will be a great energy driver to enhance Nike’s drive for innovation and showcase the technology as the 3D printing process looks fascinating.

9.3. NIKE+ MEMBERS

NIKE+ is Nike’s personal training program and community. Through the NIKE+ RUNNING APP or NIKE+ TRAINING CLUB APP people are gaining daily motivation, inspiration and advise for their exercise. Moreover it is possible for the user to track his performance and share his achievements through various Social Media Channels.

The NIKE+ RUNNING APP will be a direct link to the targeted running consumer that is looking at improving his performance. Through product suggestions the user can be directly educated on the benefits of N3K.
But NIKE+ also offers offline activities like for instance weekly running classes as a group with a free trainer. This is also an ideal opportunity to send the right message to the right consumer.

### 9.4. ATHLETE ENDORSEMENT

Endorsement of N3K products through Nike’s running athletes, like for instance the fastest women in the world Dafne Schippers or hurdling legend Liu Xiang will drive and maximize the performance message of N3K. During the Olympics in Rio 2016 Nike athletes will already be spotted with prototypes of N3K, which will be the very first hints towards the new N3K.

### 9.5. SOCIAL MEDIA ACTIVATIONS

N3K will have its own Nike account on all relevant Social Media channels: Instagram, Facebook, Twitter, but also Vimeo a premium video platform where N3K videos will be shared. Hereby must be pointed out that N3K will be less active and discrete on Social Media compared to other Nike channels. This is intended to be perceived as an exclusive premium brand that only informs its followers on the most relevant brand news like product launches.

### 10. EVALUATION

The market is asking for personal products since a long time, while mass production keeps with its traditional manufacturing methods keep on growing. Making use of AM for NIKE 3D KITCHEN will give Nike the chance to answer consumer’s need for personalized products that matches all their fit and form criteria.

With NIKE 3D KITCHEN Nike is looking at a great opportunity that will drive its road of innovation, performance and personalization. Being known as the market leader in the world of athletic footwear it is time for Nike to make the next step towards the future of additive manufacturing and its applications in order not be outpaced by competition.
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